Why is it important for this conference/topic to be included in the portfolio?

This conference will focus on high-consequence infectious disease pathogens using a One Health approach. The One Health concept recognizes that the health of people is connected to the health of animals and the environment. It is a collaborative, transdisciplinary approach—working at local, regional, national, and global levels—with the goal of achieving optimal health outcomes. The conference will focus on highlighting recent advances in research, education, policy, and service of some of the most important infectious diseases that are highly contagious, fast spreading, and cause high morbidity and mortality. Some high-impact zoonotic diseases include: rabies, brucellosis, zoonotic influenza, anthrax, and hemorrhagic fevers, among others. Addressing such issues requires large-scale collaborations including partners as diverse as governments, NGOs, international organizations, veterinarians, physicians, public-health officials, and researchers ranging from the molecular to the environmental. The Keystone conference mission is ideally suited for catalyzing productive interactions across this diverse range of fields.

Why is this the right time to develop this conference/topic?

One Health pathogens continue to exact health and economic tolls on humans and domestic animals around the world and challenge the role of livestock husbandry in balancing human environmental impact with ecological stewardship. Zoonoses constitute a high percentage of emerging diseases. Many "lingering" endemic zoonoses impose large burdens on societies, but receive little public attention. Accidental or intentional introduction or reintroduction of such pathogens require rapid detection and coordination to prevent damaging effects on public health, food security, and the economy. As zoonoses cross host-species boundaries, efforts to control infections across the wildlife-domestic-animal-human triad would be well-served by providing a timely forum for researchers and health professionals addressing all elements of this triad to meet and exchange ideas. Work is urgently needed to assemble teams to achieve significant impactful progress in response to current crises and to the next outbreaks or pandemics.

What are the important concepts that will be included?

A Keystone meeting focused on gaining better understanding of the wildlife-domestic-animal-human triad of zoonoses and using this knowledge to better control these diseases in their many hosts would be more likely to attract the necessarily diverse audience to employ a One Health approach for controlling zoonoses. With animal diseases that currently seem non-zoonotic, human infections may be mild or non-existent, but indirect effects on human health via nutrition, economics, and the environment can be devastating. The manifestations and implications of diseases in wildlife are generally the least understood. The main concepts will be to present efforts to increase the reliability of diagnostics, treatments, vaccines and regulatory control measures to reduce the incidence of zoonoses in humans, domestic animals, and wildlife. Where strongly overlapping themes exist, studies on non-zoonotic animal diseases may be included. Presentations where these connect to broader issues affecting economics, the environment, and policy will also be encouraged.

Where do you recommend that the conference be held (country or continent)?

Africa or Latin America would be ideal locations to host a One Health pathogens conference. In both cases, the burdens of zoonotic and animals diseases are widespread, and the need for increased focus from the scientific community is great. Engaging scientists and health professionals in these regions will be essential. Some of the conference proposers have extensive experience forwarding One Health efforts in these regions, and a network of connections is poised to expand. In addition to addressing specific One Health pathogens, this conference will benefit regional policy makers and educators, as well as early-career regional and outside scientists for whom new connections can help germinate future collaborative efforts. Africa has hosted several One Health conferences, funded in part by US agencies such as USAID and the Defense Threat Reduction Agency (DTRA). Latin America has hosted fewer One Health conferences, perhaps partly because DTRA considers the threat to be less.

What industry perspectives will be included in the conference (if relevant)?

Attempts to improve diagnostics and vaccines to surveil, control, and prevent diseases, and to develop better chemotherapeutics to treat on-going infections, would be desirable across the human, domestic animal, wildlife spectrum. There should also be a focus on making these prevention and treatment strategies cost effective so that they can be employed in areas of the world where infections are endemic. Many of these regions lack the economic and/or public-health infrastructure to institute and sustain comprehensive programs to control disease in animals and prevent its spread to humans. Issues of supply-chain logistics and sustainability of prevention and treatment regimens can be very important. On the research side, industrial vaccine-development efforts might derive benefits by pursuing synergistic efforts across species for zoonotic diseases. Likewise, many pathogens are intracellular, and therapeutic synergies could exist.

Are you aware of similar conferences on this topic? If so, please list and comment on how this proposed conference could be differentiated (either in terms of scientific focus and/or timing).

Best would be to host a conference in a region where the impacts of One Health pathogens are greatest. In 2019, One Health conferences were hosted by the One Health Central and Eastern Africa (OHCEA) network, and by the Africa CDC. These conferences tended to focus on One Health concepts at the macro scale. This Keystone proposal contains One Health approaches at the macro scale also, where participants will have possibly-unique opportunities to learn from first-hand expertise on lessons learned and on how research can be successfully applied to control future outbreaks. Another key distinguishing element is that this conference will add a major focus on research at the cellular, molecular, and structural scale, where vaccines, chemotherapeutics, and diagnostics are developed. Pre-conference lectures will provide fundamental background to attendees from regions where advanced educational opportunities may be limited. Latin America would also benefit greatly from this type of conference.